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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/931,286	08/16/2001	David Neil Payne	DYOUP0222US	1941

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EXAMINER	
NGUYEN, CHAU M	

ART UNIT	PAPER NUMBER
2633	8

DATE MAILED: 05/20/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/931,286	PAYNE ET AL.	
	Examiner	Art Unit	
	Chau M Nguyen	2633	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 August 2001*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-15* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☐ Claim(s) _____ is/are rejected.

7)☒ Claim(s) *1-15* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *6*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 (b) that form the basis for the rejections under this section made in this Office action:

> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 2, 3, 12 and 13 are rejected under 35 U.S.C. 102(b) as being anticipated by Giles et al. (Hereinafter "Giles") (U.S. Pat. No. 5,241,414).

As claim 1, Giles discloses an optical transmitter for a WDM system having multiple WDM channels (fig. 1) comprising:

a laser array of up to M pump lasers (11_1... 11_M) for producing respective pump beams;

a MxN multiplexer (13) having M inputs and N outputs, the M inputs being connected to receive the pump beams from respective ones of the pump lasers; and

a fiber laser array of up to N fiber lasers (14_1...14_N) operable to emit at respective wavelengths λ_1, λ_2, ... λ_N for respective ones of the multiple WDM channels, the N outputs of the multiplexer being connected to pump respective ones of the up to N fiber lasers (col. 2, lines 59-66).

As claim 2, Giles (fig. 1) shows the coupler (multiplexer) is configured so that a pump beam received at any one of its M inputs is internally routed to all of its N outputs (col. 3, lines 12-16).

As claim 3, Giles show the relationship of inputs and outputs (Giles, col. 3, lines 32-36).

As claim 12, Giles discloses an optical transmitter for a WDM system having multiple WDM channels (fig. 1) comprising:

a pump laser array of up to M pump lasers (11_1... 11_M) for producing respective pump beams;

a MxN multiplexer (13) having M inputs and N outputs, the M inputs being connected to receive the pump beams from respective ones of the pump lasers; and

an optical amplifier array of up to N optical amplifiers (15_1... 15_N), the N outputs of the multiplexer being connected to pump respective ones of the up to N optical amplifiers, the optical amplifiers each having an input for receiving a signal to be amplified (Giles col. 2, lines 64-66).

As claim 13, Giles discloses the optical amplifiers include a section of optical fiber gain medium (col. 4, lines 4-7).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 4-9, 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Giles (U.S. Pat. No. 5,241,414), as applied in the claims 1 and 12, in view of Brock et al. (Hereinafter "Brock") (U.S. Pat. No. 5,870.216).

As claim 4, Giles fails to show multiplexer comprising a plurality of multiplexing locations where the pump beams are multiplexed, the configuration being such that no more than one half the total power of the pump beams can interact at any one of the multiplexing locations. However, Brock discloses an arrayed waveguide (148, fig. 9) as a multiplexing locations where the pump beams are multiplexed, the configuration being such that no more than one half the total power of the pump beams can interact at any one of the multiplexing locations. (Brock, col. 12, lines 47-55). Therefore, it would have been obvious to one having ordinary skill in the art to employ a multiplexer as taught by Brock into the system of Giles in order to split or multiplex the pump beams. One would have motivated for dong this to reduce the system in size and cost as well. (Brock, col. 15, lines 29-37).

As claim 5, Brock also include fiber couplers (30, fig. 9) to provide the multiplexing locations.

As claim 6, Giles discloses an optical transmitter for a WDM system having multiple WDM channels (fig. 1) comprising:

a pump laser array of up to M pump lasers (11_1... 11_M) for producing respective pump beams;

a MxN multiplexer (13) having M inputs and N outputs, the M inputs being connected to receive the pump beams from respective ones of the pump lasers; and

a fiber laser array of up to N fiber lasers (14_1...14_N) operable to emit at respective wavelengths λ_1, λ_2, ... λ_N for respective ones of the multiple WDM channels, the N outputs of the multiplexer being connected to pump respective ones of the up to N fiber lasers (col. 2, lines 59-66).

Giles fails to show multiplexer is subdivided into a plurality of modules, wherein each configured so that a pump beam received at any one of the inputs of the multiplexer associated with that module is internally routed to all of the outputs of that module. However, Brock discloses multiplexer (114, fig. 9) being subdivided into a plurality of modules (148 and 150), wherein each configured so that a pump beam received at any one of the inputs of the multiplexer associated with that module is internally routed to all of the outputs of that module. Therefore, it would have been obvious to one having ordinary skill in the art to employ a multiplexer as taught by Brock into the system of Giles in order to split or multiplex the pump beams and rout to all of the outputs of that module. One would have motivated for dong this to reduce the system in size and cost as well. (Brock, col. 15, lines 29-37).

As claim 7, Giles (fig. 1) shows the coupler (multiplexer) is configured so that a pump beam received at any one of its M inputs is internally routed to all of its N outputs (col. 3, lines 12-16).

As claim 8, Giles show the relationship of inputs and outputs (Giles, col. 3, lines 32-36).

As claim 9, Brock discloses an arrayed waveguide (148, fig. 9) as a multiplexing locations where the pump beams are multiplexed, the configuration being such that no more than one half the total power of the pump beams can interact at any one of the multiplexing locations. (Brock, col. 12, lines 47-55).

As claim 14, Giles discloses an optical system, as applied to the claim 12, in that, Giles fails to show multiplexer is subdivided into a plurality of modules, wherein each configured so that a pump beam received at any one of the inputs of the multiplexer associated with that module is internally routed to all of the outputs of that module. However, Brock discloses multiplexer (114, fig. 9) being subdivided into a plurality of modules (148 and 150), wherein each configured so that a pump beam received at any one of the inputs of the multiplexer associated with that module is internally routed to all of the outputs of that module. Therefore, it would have been obvious to one having ordinary skill in the art to employ a multiplexer as taught by Brock into the system of

Giles in order to split or multiplex the pump beams and rout to all of the outputs of that module. One would have motivated for dong this to reduce the system in size and cost as well. (Brock, col. 15, lines 29-37).

5. Claims 10, 11 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Giles (U.S. Pat. No. 5,241,414), in view of Madsen et al. (U.S. Pat. No. 6,445,477 B1).

As claims 10, 11 and 15, Giles discloses an optical transmitter for a WDM system having multiple WDM channels comprising:

a laser array of up to M pump lasers (11_1... 11_M) for producing respective pump beams;

a MxN multiplexer (13) having M inputs and N outputs, the M inputs being connected to receive the pump beams from respective ones of the pump lasers; and

a fiber laser array of up to N fiber lasers (14_1...14_N) operable to emit at respective wavelengths λ_1, λ_2, ... λ_N for respective ones of the multiple WDM channels, the N outputs of the multiplexer being connected to pump respective ones of the up to N fiber lasers (col. 2, lines 59-66).

Giles fail to show a power monitoring device arranged to measure power at a point in the transmitter after the multiplexer and a feedback control device connected to control the pump lasers responsive to the power measured by the power monitoring device. However, Madsen (fig. 1) show a feedback control device (13) connected to

control the pump lasers responsive to the power measured by the power monitoring device (Madsen, col. 2, lines 3-8). Therefore, it would have been obvious to one having ordinary skill in the art to apply a feedback control device as taught by Madsen into the optical system of Giles in order to control the pump laser based on it power output. One would have motivated for doing feedback to adjust the laser source, accordingly, provide the stability of the wavelength outputs. (Madsen, col. 1, lines 44-52).

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Feuer et al. (U.S. Pat. No. 5,574,589) is cited to show self-amplified networks.

Sonderegger et al. (U.S. Pat. No. 5,796,504) is cited to show fiber-optic telemetry system and method for large arrays of sensors.

Rice (U.S. Pat. No. 5,946,130) is cited to show optical amplifier network having a coherently combined output and high-power laser amplifier containing same.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chau M. Nguyen whose telephone number is 703-305-8965. The examiner can normally be reached on Mon-Fri from 8:00 AM to 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on 703-305-4726. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-3900.

C.M.N.
May 06, 2004

JASON CHAN
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